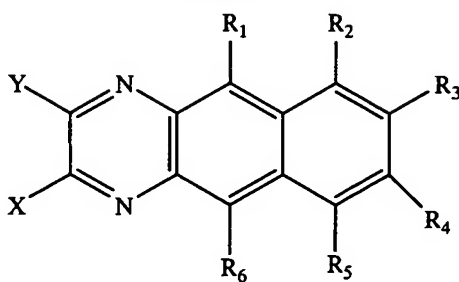


CLAIMS

1. A quinoxaline derivative represented by general [formula 1]:

5

[formula 1]

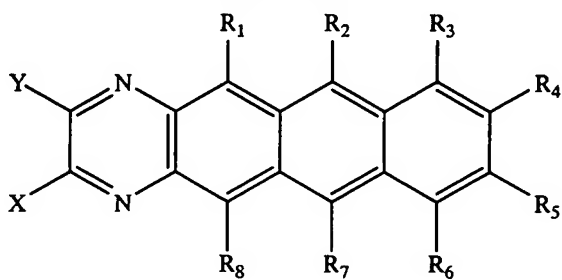


(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

10

2. A quinoxaline derivative represented by general [formula 2]:

[formula 2]



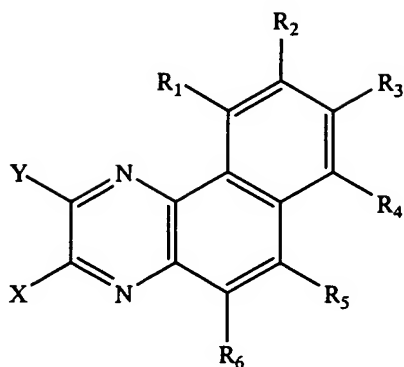
15

(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R8 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

20

3. A quinoxaline derivative represented by general [formula 3]:

[formula 3]

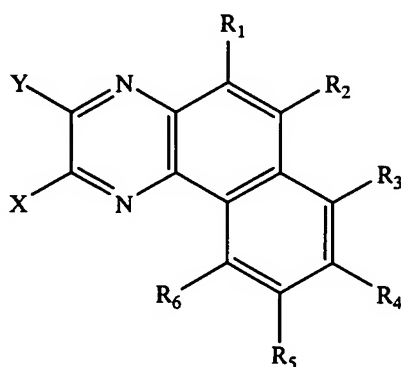


(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

4 A quinoxaline derivative represented by general [formula 4]:

10

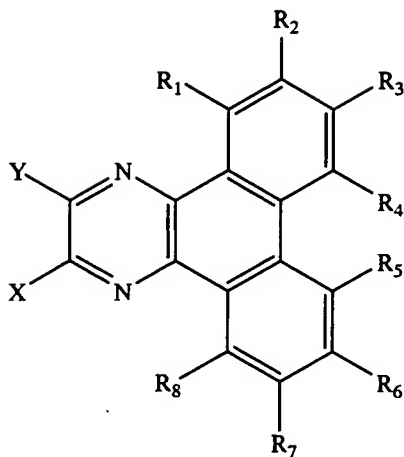
[formula 4]



(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

5 A quinoxaline derivative represented by general [formula 5]:

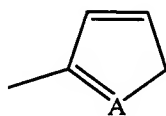
[formula 5]



(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R8 represent individually hydrogen, an alkyl group, an alkoxy group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

6. The quinoxaline derivative according to any one of Claims 1 to 5, wherein the quinoxaline derivatives comprising the heterocyclic group represented by general [formula 6]:

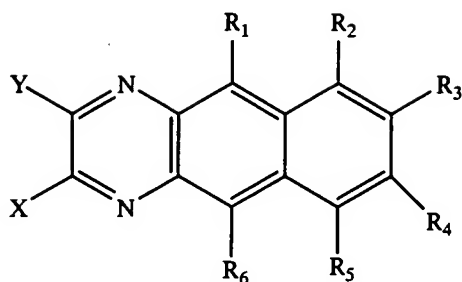
[formula 6]



(wherein A represents S or O.)

7. An organic semiconductor device comprising a quinoxaline derivative represented by general [formula 1]:

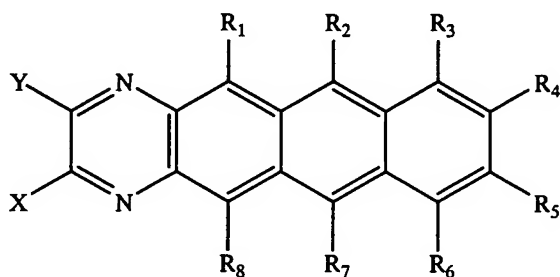
[formula 1]



(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

8. An organic semiconductor device comprising a quinoxaline derivative represented by general [formula 2]:

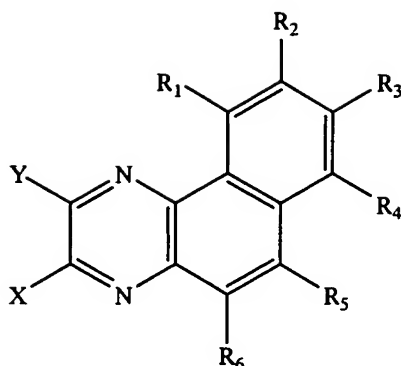
[formula 2]



(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R8 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

9. An organic semiconductor device comprising a quinoxaline derivative represented by general [formula 3]:

[formula 3]

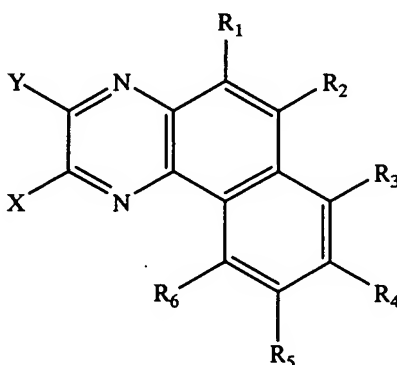


(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent
 5 individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

10. An organic semiconductor device comprising a quinoxaline derivative represented by general [formula 4]:

10

[formula 4]

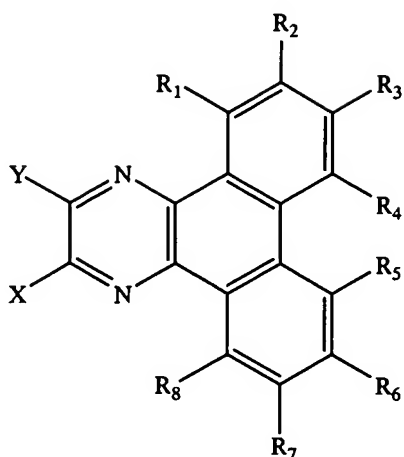


(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent
 15 individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

11. An organic semiconductor device comprising a quinoxaline derivative

represented by general [formula 5]:

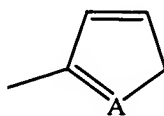
[formula 5]



5 (wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R8 represent individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

10 12. The organic semiconductor device comprising the quinoxaline derivative according to any one of Claims 7 to 11, wherein the quinoxaline derivative comprising heterocyclic group represented by general [formula 6]:

[formula 6]



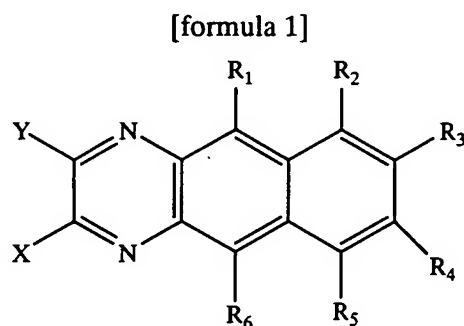
15

(wherein A represents S or O.)

13. An electroluminescent device according to any one of Claims 6 to 12, wherein the quinoxaline derivatives are used as an electron transporting material.

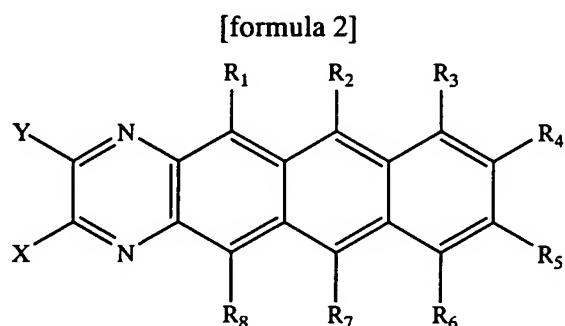
14. An electroluminescent device according to any one of Claims 6 to 12, wherein the quinoxaline derivatives are used as a hole blocking material.

15. An electroluminescent device comprising a light-emitting layer comprising
5 a quinoxaline derivative represented by general [formula 1] and a guest material:



(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl
10 group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent individually hydrogen, an alkyl group, an alkoxy group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

16. An electroluminescent device comprising a light-emitting layer comprising
15 a quinoxaline derivative represented by general [formula 2] and a guest material:

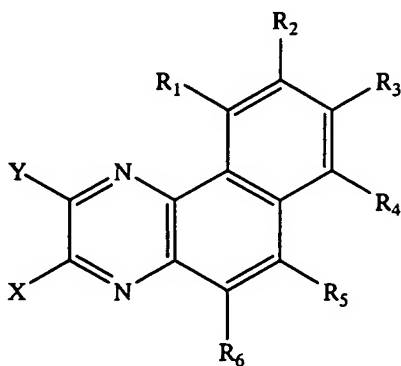


(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl
20 group, or a substituted or unsubstituted heterocyclic group, and R1 to R8 represent individually hydrogen, an alkyl group, an alkoxy group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

17. An electroluminescent device comprising a light-emitting layer comprising a quinoxaline derivative represented by general [formula 3] and a guest material:

5

[formula 3]



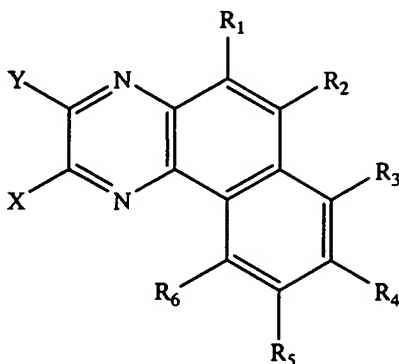
(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent individually hydrogen, an alkyl group, an alkoxy group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

10

18. An electroluminescent device comprising a light-emitting layer comprising a quinoxaline derivative represented by general [formula 4] and a guest material:

15

[formula 4]

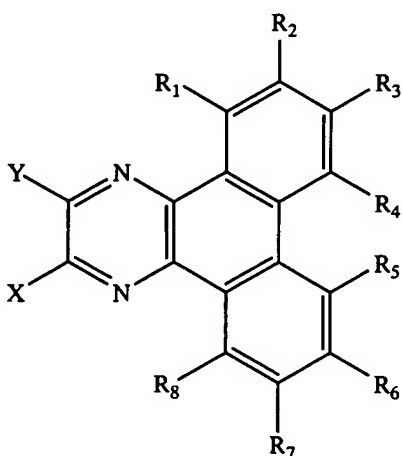


(wherein X and Y represent alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent

individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted aryl group, and a substituted or unsubstituted heterocyclic group.)

19. An electroluminescent device comprising a light-emitting layer comprising
5 a quinoxaline derivative represented by general [formula 5] and a guest material:

[formula 5]



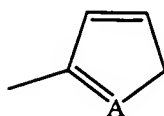
- (wherein X and Y represent alkyl group, a substituted or unsubstituted aryl
10 group, or a substituted or unsubstituted heterocyclic group, and R1 to R6 represent
individually hydrogen, an alkyl group, an alkoxyl group, a substituted or unsubstituted
aryl group, and a substituted or unsubstituted heterocyclic group.)

20. The electroluminescent device according to any one of Claims 19 to 23, the
15 electroluminescent device comprising:

a light-emitting layer containing a guest material; and
quinoxaline derivatives,

wherein the quinoxaline derivatives comprising heterocyclic group represented
by general [formula 6]:

[formula 6]



(wherein A represents S or O.)

- 5 21. An electroluminescent device according to any one of Claims 15 to 20, the guest material is a phosphorescent material.